

REMARKS

With the above amendment, Claims 1, 3, 9, and 11 have been amended. Claims 2 and 10 have been cancelled. The amendments to Claims 1 and 9 are fully supported by cancelled Claims 2 and 10, respectively, as well as throughout the specification. The amendments to dependent Claims 3 and 11 simply change dependencies from the cancelled Claims 2 and 10 to the currently amended Claims 1 and 9. Support for new Claims 17 and 18 is found in paragraphs 14 and 15 of the specification. No new matter is introduced with these amendments.

Claims 1-16 stand rejected under 35 U.S.C. 103 (a) as obvious over Streinz et al. ('686) in view of either (1) Smith et al. or (2) McCutheon's Volume 1: Emulsifiers and Detergents. With the present amendment, applicants believe that their amended claims are not obvious with these combinations of references. More specifically, amended Claim 1 is directed to a polishing composition comprising an abrasive, a fluoride salt, and an acetylenic alcohol, wherein the acetylenic alcohol has at least two hydroxyl substituents. Streinz et al. ('686) disclose polishing slurries comprising an oxidizing agent, an abrasive, a fluoride containing additive, and optionally a surfactant that can be of any type – anionic, cationic, nonionic, amphoteric and combinations of two or more surfactants. There are a very large number (probably at least in the hundreds or thousands) of surfactants that fall within these very broad categories. There is no disclosure nor even a hint thereto in Streinz et al. that the surfactant can be an acetylenic diol, wherein the acetylenic alcohol has at least two hydroxyl substituents, which is the focus of the present invention with the amended claims.

Smith et al. ('905), as the examiner has indicated in the office action, is a reference unrelated to chemical mechanical polishing and instead is directed to methods of removing residues from various surfaces. The compositions of this reference can contain anionic, cationic, or nonionic surfactants. There is no preference for one type over another. This reference lists 2,4,7,9-tetramethyl-5-decyn-4,7-diol and 4,7-dimethyl-5-decyn-4,7-diol as examples of nonionic surfactants that can be used according to the '905 invention that is in an art area outside of polishing (in general) and chemical mechanical polishing.

The McCutheon reference simply is a compilation of a multitude of different surfactants of all types, including anionic, cationic, and nonionic. Included is a family of

commercial surfactants that have the trademark "Surfynol®" from Air Products and Chemicals. The vast majority of the Surfynol® surfactants are alkoxyated (e.g., ethoxyated), including Surfynol®s 420, 440, 465, and 485w. In contrast, a Surfynol® surfactant that is non-alkoxyated and has free hydroxyl groups is the Surfynol® 104 series, which is 2,4,7,9-tetramethyl-5-decyn-4,7-diol, in various formulations.

Neither Smith nor McCutcheon have teaching(s) or even hint at the use of surfactants in chemical mechanical planarization (CMP) or other types of polishing. As indicated above, there is no teaching or even a hint at using acetylenic diol surfactants in CMP applications in Streinz. Hence there is no motivation to combine either Smith or McCutcheon with Streinz, especially in view of the amended claims. Applicants thus respectfully request removal of this rejection.

Claims 1-16 stand rejected under 35 U.S.C. 103 (a) as obvious over Misra et al. ('735) in view of either (1) Smith et al. or (2) McCutcheon's Volume 1: Emulsifiers and Detergents. With the present amendment, applicants believe that their amended claims are not obvious with these combinations of references. More specifically, amended Claim 1 is directed to a polishing composition comprising an abrasive, a fluoride salt, and an acetylenic alcohol, wherein the acetylenic alcohol has at least two hydroxyl substituents. Misra et al. discloses/claims a method for making a slurry composition, which is suitable for CMP, the method comprising combining abrasive particles, a suspension medium, a peroxygen compound, and an etching agent (e.g., ammonium fluoride). The Misra et al. slurry compositions are stated to preferably contain a surfactant, and Surfynol® 440 is given (col. 6, line 34) as one example of a surfactant that can be used.

Smith et al. ('905), as the examiner has indicated in the office action, is a reference unrelated to chemical mechanical polishing and instead is directed to methods of removing residues from various surfaces. The compositions of this reference can contain anionic, cationic, or nonionic surfactants. There is no preference for one type over another. This reference lists 2,4,7,9-tetramethyl-5-decyn-4,7-diol and 4,7-dimethyl-5-decyn-4,7-diol as examples of nonionic surfactants that can be used according to the '905 invention that is in an art area outside of polishing (in general) and chemical mechanical polishing.

As stated earlier with regard to the other rejection, the McCutheon reference simply is a compilation of a multitude of different surfactants of all types, including anionic, cationic, and nonionic. Included is a family of commercial surfactants that have the trademark "Surfynol®" from Air Products and Chemicals. The vast majority of the Surfynol® surfactants are alkoxyated (e.g., ethoxylated), including Surfynol®s 420, 440, 465, and 485w. In contrast, a Surfynol® surfactant that is non-alkoxyated and has free hydroxyl groups is the Surfynol® 104 series, which is 2,4,7,9-tetramethyl-5-decyn-4,7-diol, in various formulations.

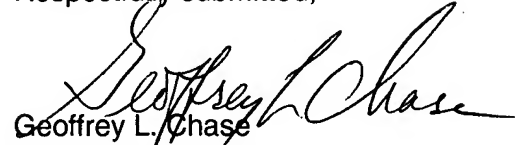
Neither Smith nor McCutheon have teaching(s) or even hint at the use of surfactants in chemical mechanical planarization (CMP) or other types of polishing. As indicated above, there is no specific teaching of using an acetylenic diol surfactant having hydroxyl group(s) in CMP applications in Misra. The only explicit example of a surfactant given in Misra et al. is Surfynol® 440, which is an ethoxylated acetylenic diol as indicated in the McCutheon reference. An alkoxyated nonionic surfactant has much different properties than a related surfactant that is non-alkyloxyated but otherwise structurally similar. In particular the hydrophilic/lipophilic balance (HLB) values are much different for these two cases. As indicated in the McCutheon reference, the HLB value of Surfynol® 440 is 8 while the HLB value of Surfynol® 104 is 4. With regard to much differing properties, unlike ethoxylated nonionic surfactants (e.g., Surfynol® 440), alkyne diols (e.g., Surfynol® 104) are nonfoaming due to low HLB values, and the absence of ether groups in an alkyne diol surfactant, such as Surfynol® 104 keeps dispersions having this type of surfactant from flocculating. In view of these considerations, and the amended claims, there is no motivation to combine either Smith or McCutheon with Misra.

Applicants thus respectfully request removal of this rejection.

Appl. No. 10/730,527

A petition to make this Amendment timely has been separately submitted.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Geoffrey L. Chase". The signature is fluid and cursive, with the first name "Geoffrey" and last name "Chase" being clearly legible.

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attachment: Petition for Extension of Time
PTO Form SB/17

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